Public Sector Information (PSI) Online

Measuring the Social and Economic Cost and Benefits: Review of the Literature and Future Directions

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This presentation is

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Outline

- Benefits of Access to and Re-use of PSI
- Government Policies
- Literature Review: Measuring the PSI Re-use Market & Linking Outcomes to Access Regimes
- Weaknesses and Challenges of Current Measurement Approaches
- Suggestions for Future Directions

Benefits of PSI Access and Re-use

- **Direct and Indirect Economic Benefits**
  - information industries develop new markets
  - other industries enhance efficiencies
  - individuals empowered as economic actors
  - public sector performance improved
  - more innovative research communities

- **Social Benefits**
  - improve political transparency
  - enhance education and research
  - support personal decision-making capabilities

Government Policies

Some Dimensions of PSI Policy

1. Equal treatment and competition
2. Transaction costs to obtain PSI
3. Transparency of access conditions and data characteristics (meta-data level)
4. Accountability
5. Scope of public sector activity in information provision
6. Information quality
7. Access and discoverability
8. Pricing
9. Reuse

Government Policies

Approaches between US and EU differ:

- United States: public domain and open access default rule– Copyright Act waives rights in information produced by federal government, OMB Circular A-130 recommends dissemination of PSI at marginal cost—free online
- European Union and most other countries: copyright protection of most PSI, frequently using a cost recovery model; but: PSI Directive and Environmental Information Directive encourage broader and freer access and reuse
- Hybrid models with permutations of policies everywhere

Government Policies

Compelling reasons for placing government-generated data and information in the public domain under open access conditions:

- ***Legal:***

  A government entity needs no legal incentives from exclusive property rights to create information. Both the activities that the government undertakes and the information produced by it in the course of those activities are a [global] public good.

- ***Ethical*:**

  The public has already paid for the production of the information. Burden of additional access fees falls disproportionately on the individuals least able to pay.

Government Policies

- ***Political*:**
  Transparency of governance is undermined by restricting citizens from access to and use of public data and information. Rights of freedom of expression are compromised by restrictions on re-dissemination of public information, particularly of factual data.

- ***Socio-economic*:**
  Numerous economic and social positive externalities—especially through network effects—can be realized on an exponential basis through the open dissemination of data and information on the Internet. Conversely, the commercialization of public data and information on an exclusive basis produces de facto public monopolies that have inherent economic inefficiencies and are contrary to the public interest on other social, ethical, and good governance grounds.

Analysis of Open Access and Cost Recovery Policies

Background studies leading to subsequent empirical measurements:

- U.S. NAS (1997), "Bits of Power: Issues in Global Access to Sci Data"
- EU (1998) "Green Paper on Public Sector Information"
- Lopez (1998) "The dissemination of spatial data"
- Dutch Federal Geographic Data Committee (2000) on economic effects of open access policies for spatial data
- Zillman and Freebairn (2000) "Economic Framework for the Provision of Meteorological Services"
- U.S. NAS (1999) "A Question of Balance: Private Rights and the Public Interest in S&T Databases"
- Dutch Ministry of the Interior (2001) "Prosperity effects of different pricing models for PSI"
- Maurer (2001) "Across Two Worlds: Database Protection in the US and Europe" on the European Database Directive

Literature Review of Empirical Studies (1998-2008)

Study Title	Prepared by/for and year
MEPSIR: Measuring European Public Sector Information Resources.	The study was performed by a Team from HELM and Zenc with a group of country researchers (2006)
PIRA International “Commercial Exploitation of Europe’s Public Sector Information”	Final Report for the European Commission, Directorate General for the Information Society (2000)
The economic contribution of Ordnance Survey GB	Oxera (1999)
The economic benefit of the BGS	Roger Tym & Partners (2003)
Borders in Cyberspace: Conflicting Public Sector Information Policies and their Economic Impacts	Peter Weiss ,U. S. Department of Commerce NOAA,National Weather Service (2002)
Canadian Geospatial Data Policy Study	Prepared for GeoConnections , Policy Advisory Node by: *Garry Sears* KPMG Consulting Inc. (2001)
The Power of Information: An independent review by Ed Mayo and Tom Steinberg	This report reflects the views of the external authors and is not a statement of government policy (2007)
The Commercial use of Public Information (CUPI): Economic value and detriment analysis	A report prepared for the Office of Fair Trading by DotEcon Ltd . (2006)
Economic value of current and improved weather forecasts in the U.S. household sector	*Prepared for:* Office of Policy and Strategic Planning *Prepared by:* Stratus Consulting Inc. (2002)
Estimating Economic Benefits from NOAA Physical Oceanographic Real-Time System “PORTS®” Information: A Case Study of Tampa Bay	Report prepared for the Tampa Bay Harbor Safety Committee by Dr. Hauke Kite- Powell,the Woods Hole Oceanographic Institute Marine Policy Center (2005)
The Value of Snow and Snow Information Services	Richard M. Adams Laurie L. Houston, Rodney F. Weiher . Report prepared For NOAA’s National Oper-ational Hydrological Remote Sensing Center (2004)
Study of the Economic Impact of the Spatial Data Infrastructure in the Region of Catalunya	By the Centre of Land Policy and Valuations of the Universitat Politècnica de Catalunya (2007)
Benefits of the New GPS Civil Signal: The L2C Study	Leveson Consulting, on behalf of the U.S. departments of commerce and transportation (2006)
The EcoGeo Project	Stéphane Roche, PhD. Project Leader
Developing geographic information infrastructures: The role of information policies	By Bastiaan VAN LOENEN (2006)

Learning from other fields & contexts

Study Title	Prepared by/for and year
Economic Value of the Nova Scotia Ocean Sector	Prepared for Govt. of Canada By: Michael Gardner, Robert Fraser and Mike Milloy, Gardner Pinfold Consulting Economists Ltd., James Frost, MariNova Consulting Ltd., Halifax, Nova Scotia (2005)
Economic Framework for Meteorological Service Provision	Don Gunasekera, Bureau of Meteorology, Melbourne, Australia (2002)
Economic impact of open source software on innovation and the competitiveness of the (ICT) sector in the EU	Prepared for the European Commission. Lead contractor: UNU-MERIT, the Netherlands. Prepared by: Rishab Aiyer Ghosh, MERIT (2006)
Estimating the Economic Benefits of Regional Ocean Observing Systems	Prepared for the National Oceanographic Partnership Program, Marine Policy Center Woods Hole Oceanographic Institution , Hauke L. Kite-Powell, Charles S. Colgan. DRAFT (2004)
Economic Contribution of Fair Use and Information Technology Dependent Industries to the U.S. Economy	Prepared for the Computer & Communications Industry Association (CCIA) by Thomas Rogers ,Andrew Szamosszegi, economic consultants with Capital Trade, Incorporated (2007)

Literature Review: Methodologies

Overview of data collection and measurement approaches

Data Sources	Data Collection Methods	Techniques (examples)	Methodological Approaches
Primary: Industry, government, end users **Secondary:** mainly government proxy data (e.g., GDP, household income, employment, payroll, and exports) and industry reports	▪ Desk research ▪ Web survey ▪ Online questionnaires ▪ Interviews ▪ Self reporting ▪ In-depth case studies ▪ Focus groups ▪ Delphi study or expert opinion	▪ Estimate of overall PSI market size based on estimates of respondents ▪ Estimate of overall PSI market size based on turnover ▪ International comparisons ▪ Projection, scenario analysis, expert opinion, and team consensus approaches	▪ Market-based approaches ▪ Contingent valuation method ▪ Conjoint analysis ▪ Normative decision-making models ▪ Economy-wide analysis

Current Approaches: Weaknesses and Challenges

Weaknesses:

- Scope of current studies inconsistent and not comparable
- Unreliability of estimates to determine values of PSI products
  - Studies often overestimate the true value of PSI to the economy by ignoring the substitutes available in the absence of PSI
  - Studies didn't explain in details why a certain technique or approach was used
- Lack of longitudinal studies (internally comparable)

Weaknesses:

- Lack of strong theoretical foundation and robust data collection approaches
- Insufficient multidisciplinary or multidimensional studies
- Insufficient focus on individual re-users (both as economic and social actors)
- No focus on network effects or network externalities from online provision of PSI

Current Approaches: Weaknesses and Challenges

Inherent Challenges:

- Data-related difficulties
  - Problems in separating PSI-dependent sectors from rest of information economy
  - Limited availability and quality of existing information in general
- Heterogeneity of subject matter (many types of PSI)
- Substantial costs of comprehensive empirical studies
- Lack of political will to learn about weaknesses of PSI policy and practice

Essential questions for ongoing discussions

1. What are the commonalities and differences among the various methods used to measure the value of PSI?

   What are the most effective metrics or indicators for the assessment of particular kinds of information and policy?

   What approaches can be used to effectively measure the network effect of the use of PSI online?

   What are the main strengths weaknesses in these approaches in terms of accuracy, comprehensiveness, relevance, validity and reliability?

Essential questions for ongoing discussions

5. What theoretical frameworks, models, and best practices used in assessing other information products can be applied to the assessment of the policies of access and re-use of digital PSI?

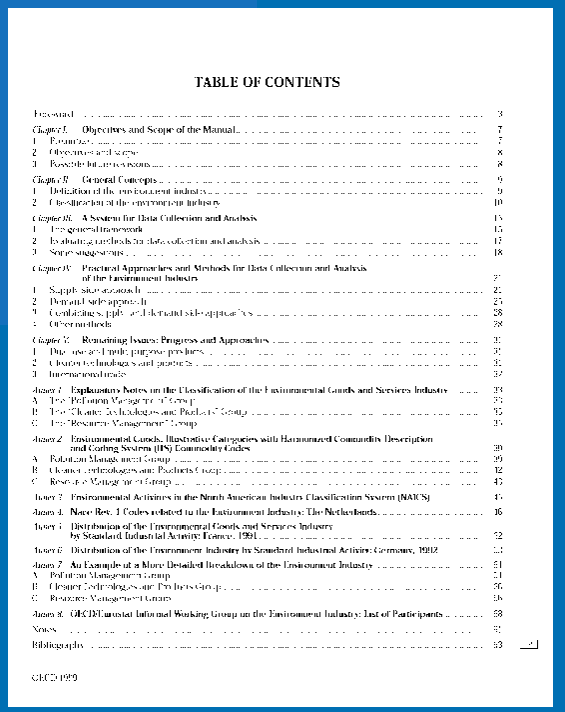
6. What future directions might be pursued for the better study and measurement of access to and reuse of PSI online?

7. What other questions or issues should be raised in this context?

Suggestions for Future Directions

1- Working towards a Manual for Data Collection and Analysis of PSI Policies

- Progress in measurement of PSI policies seems to have virtually stalled
- One way forward is to develop a "Manual for Data Collection and Analysis of PSI Policies"
- Would ideally involve statisticians (e.g. EUROSTAT), national accountants (e.g. from the U.S.) and other PSI experts
- Similar model was successfully used by OECD DSTI in co-operation with Eurostat in 1999 to produce a manual on data collection and analysis in the environmental goods and services industry



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Suggestions for Future Directions

2- Create a digital repository of PSI-related information—studies/methods/results

3- Promote and conduct more academic-focused research that is informed by well-established theories and methodologies, including greater attention to:

- Role of individual users (not just industry)
- Methodologies for social effects (not just economic)
- Network effects and network externalities (both positive and negative) need new assessment methods
- Role of automated knowledge discovery (extraction and re-use)
- Pilot projects to test different approaches
- Promoting involvement of young scientists

4- Others???

Further Reading

Additional works on PSI, scientific data access, and public domain issues (all available freely online or from puhlir@nas.edu):

- *Bits of Power: Issues in Global Access to Scientific Data (NAS, 1997)*
- *The Role of S&T Data and Information in the Public Domain (NAS, 2003)*
- *Reichman, J.H. and Paul F. Uhlir, "A Contractually Reconstructed Research Commons for Scientific Data in a Highly Protectionist Intellectual Property Environment, 66 Law & Contemporary Problems 315-462 (2003)*
- *Paul F. Uhlir, UNESCO Policy Guidelines for the Development and Promotion of Governmental Public Domain Information (2004)*
- *Open Access and the Public Domain in Digital Data and Information for Science (NAS, 2004)*
- *Strategies for Open Access to and Preservation of Scientific Data in China (NAS, 2006)*
- *Uhlir & Schröder, "Open Data for Global Science", Data Science Journal, CODATA, (2007).*

THANK YOU!